**WILD HONEY BEES OF THE GLASLYN ESTUARY, SNOWDONIA**
**CLIVE & SHÂN HUDSON**

We cannot be certain that the bees referred to in this study are wild, meaning indigenous bees. They may be wild, or they may be feral. They are clearly 'locally adapted' and are living, seemingly happily, as wild insects in hollow trees. Hopefully, in the not too distant future, DNA analysis will bring clarity to this interesting question.

Wild honey bee colonies are not easy to find, our record is one in thirty years! Out of the seven colonies featured in this article five were found by friends who are not beekeepers, and they are all in an area at the northern end of the reclaimed Glaslyn estuary or on the nearby hill sides. From these chance finds, one story stands out. It features a dog being exercised in a local wood. The dog chased a squirrel. The squirrel shot up a tree and into a convenient hole. A split second later the terrified squirrel exited the hole and fled the scene. Guard bees shot from the hole and headed straight to our friend who was just a few feet away. Although receiving a number of stings our friend was happy to return to the site to show us the tree.

The one wild colony we have found in a tree was on 7th June 1986; it was our second year as beekeepers and we were very keen beginners! We had overwintered two colonies and were determined to prevent them swarming. On one colony an artificial swarm had been performed because it had produced queen cells; the other colony had no queen cells. And then we heard a swarm in an area some way from our hives. The swarm was located and later in the day hived into a nucleus box. Phew! The following day we heard another swarm, in the same area, with the sound coming from the neighbouring woodland. We investigated and found lots of bee activity. We had found our first and only 'bee tree'. From then on we checked the colony from time to time and collected the occasional swarm, typically smallish casts, that emanated from the tree.

Although pleased to have found the wild colony we thought little about it until 1998 when we first found *Varroa* in our hives. By that year *Varroa* had been in the UK for a number of years and the ' wisdom of the time' was quite clear in saying that those beekeepers that did not chemically treat their colonies would lose them, and all feral colonies would die out. Since 1998 we have checked ' our bee tree', Tree 1 in the table, (fig. 1) each season particularly in the Spring and Autumn. The colony has not died out, and to the best of our knowledge, has been in continuous occupation.

We recall discussing this with John Verran, Regional Bee Inspector for Wales at that time in those early days of *Varroa*. John had heard similar accounts and suggested it may be down to a mechanism aided by the relatively small cavities bees often occupy in our native woodland trees. Small cavities, John suggested, would restrict colony size, and promote early swarming. In turn this process would inhibit the population of *Varroa* by disrupting their breeding during the resulting brood free interval while the colony raised a new queen. John is still supportive of this suggestion and happy to be quoted, but stresses that it can be difficult knowing if feral colonies have survived or have died out and re-colonised.

Out of the remaining six colonies surveyed three have been continuously occupied for at least five years, one for three years, and the remaining two are currently unoccupied, having lost their colonies in the last two years.

In 2012 we decided to survey and record information on the 'bee trees' we knew. Equipped with ladders, GPS, measuring tapes, our bee gear and climbing ropes we spent a number of days on the survey. We have summarised the main data in the table and chosen a number of observations that we hope will be of interest.

| | Tree No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|
| **Ht. above OD (m)** | | 58 | 34 | 57 | 2 | 110 | 58 | 2 |
| **Tree** | **Setting** | Wood | Wood edge | Wood edge | Field | Wood edge | Wood | Wood edge |
| | **Species** | Oak | Oak | Oak | Ash | Ash | Oak | Alder |
| | **Girth (1m above ground) (m)** | 1.15 | 4.6 | 1.98 | 4.6 | 4.4 | 1.92 | 2.5 |
| | **Girth (at entrance (m)** | 1.15 | 2.1 (side Branch) | 1.98 | 1.8 | 4.7 | 2.o | 2.2 |
| **Entrance (s)** | **Orientation** | E& N-E | NNW | NW | NE | E | E | E&SSW |
| | **Number** | 2 | 1 | 1 | 1 | 5 | 1 | 2 |
| | **Size (mm)** | 60, 70 | 200x200 | 55hx85w | 180hx10w | 10-20 | 300x150 | 5-20x350 |
| | **Height above ground (m)** | 2.1, 3.1 | 4.1 | 1.3 | 1.5 | 3.85 | 4.85 | 1.8 (both) |
| **Comb** | **Orientation** | Cold/warm | cold | warm | --- | --- | cold | -- |

**Table 1: Summary of data from survey of bee colonies in trees, Summer 2012**

**The trees:** Six of the trees are in, or on the edge, of deciduous woodland. The seventh is an isolated tree in a field, with deciduous woodland within 100m. All the trees are old but living, with hollow interiors in some part of the tree. The two ash trees, both common ash, and one oak are large trees. By contrast one oak tree (Tree 1, fig. 1) is quite slender and gives the impression of being almost a hollow cylinder with two entrances separated by 1m.

**Figure 1: Tree 1, an entrance and a closer view of the large propolis screen and 'warm way' comb**

**The entrances:** Twelve out of the thirteen entrances face between northwest and east in direction, with only one facing a southerly direction. It may be bees are content to occupy any suitable space regardless of which way the door faces!

**Figure 2: Tree 6, Colony in 'the open' with comb definitely 'cold way'!**

The openings used by the bees to access the hollow interiors vary a lot in their size and form. Some are 'straight forward' round or nearly round holes between 50mm to 85mm in diameter. Others are much larger; Tree 6 (fig. 2) has an opening that you could fit your head in with a lot of comb and the colony completely open to the fresh air. You may have seen this colony before as it featured in an ITV television programme in the Autumn of 2014 ('Wilderness Walks with Ray Mears, Snowdonia'). On the other hand, some openings are so narrow you struggle to fit the end of a pencil into them. The alder, Tree 7, appears quite rotten and the bees enter through narrow slits in the deteriorating bark. The multiple entrances of Tree 5 are also small cracks in the contorted bark of a large burr growth. A close up of one entrance on the burr is shown in fig. 3.

**Figure 3: Tree 5, close-up of bees at one of the small entrances on the burr of a common ash tree**

**Propolis screens:** A fascinating feature of a number of entrances is the construction of a screen of propolis immediately inside the entrance, (fig. 1). We are all familiar with propolis in our hives gluing box and frame parts together, but sheets of propolis are not usually seen in hives. The screens of propolis seen in three of the bee trees illustrate the origin of the name 'propolis' from Greek , meaning , 'before the city'. The screens are hard and appear quite tough, more than adequate to

protect the colony from adverse weather. Why some colonies build these structures and others do not is one more question to add to a long list of queries.

**Comb orientation:** Beekeepers often deliberate on whether to orientate frames 'warm way' (parallel to the entrance), or 'cold way' (right angle to the entrance)? However, it appears the bees cannot decide either! Out of the five entrances where it was possible to see comb (usually by reviewing pictures taken with flash), two were warm way, two were cold way and one had comb visible that was orientated in both directions! (figs 1 and 2)

**Conclusions:** It is interesting to compare the lives of these wild, or at least living-as-wild insects, to a trend in beekeeping that has increased particularly in the last two decades to medicate, supplement, stimulate, artificially inseminate, and even chemically fumigate the insects we house in our hives. Perhaps the study of these locally adapted bees is valuable to us beekeepers; to remind us how our local honey bees can live entirely on their own and in their own way.

Luckily we don't think the bees referenced in this article know about the European Commission Directive that states the conditions that allow the importation of honey bees of different species into the UK (Directive 92/65/EC). How important do we believe 'local adaptation' is for the long term survival of our local honey bees? Clearly bees imported hundreds, sometimes thousands of miles from their own regions, and of different subspecies, are not 'locally adapted'. Could there be questions for us all regarding the bees we keep and how we treat them? May bee!

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